Signed 9/27/95

4WD-RCRA

SUBJ: Evaluation of Lockheed Martin's status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: FLD 060 240 207

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THRU: Kent Williams
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TO: G. Alan Farmer
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I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Lockheed Martin's status in relation to the following RCRIS corrective action codes:

1) Human Exposures Controlled Determination (CA725),

2) Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

Concurrence by the RCRA Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above.

II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are three (3) national status codes under CA725. These status codes are:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this data.

3) NC No control measures necessary.

Region 4 has also added a regional status code to CA725 which tracks initial evaluations in which a determination is made that plausible human exposures to current contamination risks are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable during the first CA725 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NC) to explain the current status of exposure controls.

This particular CA725 evaluation is the first evaluation performed by EPA for the Lockheed Martin facility in Orlando. Because assumptions have to be made as to whether or not current human exposures are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this memo first examines each environmental media (i.e., soil, groundwater, surface water, air) at the entire facility including any offsite contamination emanating from the facility rather than from individual areas or releases. After this independent media by media examination is presented, then a final recommendation is offered as to the proper CA725 status code for Lockheed Martin.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents: February 1992 draft RFI Work Plan for the Central Wastewater Pretreatment Facility, Revision II of the final RFI Work Plan for the Waste Conservation Area and Hellfire Assembly Area, Third Quarter 1994 Status Report on Groundwater Monitoring and Remediation, Fourth Quarter 1994 Status Report on Groundwater Monitoring and Remediation, First Quarter 1995 Status Report on Groundwater Monitoring and Remediation, Semi-Annual and Annual Report on Effectiveness of Corrective Action at Site 5.

III. MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF CURRENT HUMAN EXPOSURES

OPTION 3: Groundwater is contaminated onsite, and plausible onsite human exposures are controlled by Access Controls.

Releases from SWMUs and/or AOCS have contaminated groundwater at concentrations above relevant action levels (i.e., state MCLs or equivalent human health based numbers following the Proposed Subpart S methodology) in several locations of the facility: Landfill #3, Landfill #4, Landfill #5, Landfill #6, the MEC Building, the Central Wastewater Pretreatment Facility and the Waste Conservation Area. All of

this contamination is currently found onsite. In other words, there is no offsite contamination known at this time.

The following is a summary of the contamination at each solid waste management unit (SWMU) or SWMU Area. At each SWMU or SWMU Area, the designated boundary used for measuring the recovery system's success at controlling the migration of contaminated groundwater is defined by the extent of the plume above state primary drinking water standards (i.e., state MCLs).

Landfills #3 and #4:

Landfills #3 and #4 are closed SWMUs. The aquifers contaminated above relevant action levels by either Landfill #3 or Landfill #4 include the Upper Surficial, Lower Surficial and Intermediate and the Floridan Aquifers.

The groundwater contaminants at Landfill #3 and Landfill #4 are volatile organics (main constituents and highest concentration for Landfill #3 as of the First Quarter 1995: 1,2 dichloroethylene and trichloroethylene at 16,090 ppb and 12,990 ppb, respectively; main constituents and highest concentrations for Landfill #4 as of the First Quarter 1995: 1,2 dichloroethylene, 1,1,1 trichloroethane, 1,1 dichloroethene at 2,355 ppb, 534 ppb and 473 ppb, respectively). The state primary drinking water standards for 1,2 dichloroethylene and trichloroethylene, 1,1,1 trichloroethane, 1,1 dichloroethene are 70 ppb, 3 ppb 200 ppb and 7 ppb, respectively.

For Landfill #3, the horizontal extent of the groundwater plume in the upper Surficial Aquifer which is above state MCLs is 540 feet by 260 feet. The horizontal extent of Landfill #3's groundwater plume in the lower Surficial Aquifer (50 +/- zone) which is above state MCLs is 540 feet by 500 feet. At Landfill #3, a groundwater plume above state MCLs of approximately 500 feet by 300 feet exists in the Intermediate Aquifer. In the Floridan Aquifer, the horizontal extent of the groundwater plume which is above state MCLs is 200 feet by 100 feet.

Landfill #4 has a groundwater plume in the upper Surficial Aquifer above state MCLs which covers an area of approximately 1,020 feet by 420 feet. No contaminant concentrations above state MCLs have been identified below the upper Surficial Aquifer.

Groundwater recovery systems have been installed at both Landfill #3 and #4 in all contaminated aquifers. The overall system began operation in June of 1992. As of September 1994, the groundwater plumes in all of the aquifers appeared to be stabilized (i.e., no longer

expanding). However, further assessment activities have recently been identified as necessary, and a final opinion on stabilization success cannot be made until this additional work is completed and evaluations performed.

Landfill #5:

Landfill #5 is a RCRA Regulated Unit. A Closure/Post-Closure Permit for this landfill was issued by the state in November of 1987. The Surficial, Intermediate and Floridan Aquifers all have some areas of contamination above relevant action levels.

The groundwater contaminants at Landfill #5 are volatile organics (main constituents and highest concentrations as of First Quarter 1995: 1,2 cis dichloroethene, trichloroethene, vinyl chloride and tetrachloroethene at 635 ppb, 2402 ppb, 351 ppb and 2389 ppb, respectively). The state MCLs for 1,2 cis dichloroethene, trichloroethene, vinyl chloride and tetrachloroethene are 70 ppb, 3 ppb, 1 ppb and 3 ppb, respectively.

The horizontal extent of contamination for the Surficial Aquifer is approximately 900 feet by 600 feet, while the horizontal extent of contamination in both the Intermediate Aquifer and the Floridan Aquifer is approximately 150 feet by 200 feet.

A modified groundwater recovery system for Landfill #5 started operations in May 1992 and full operation began in July 1992. The plume appears to be contained (i.e., no longer expanding) for the Intermediate and Floridan Aquifers; however, six additional lower Surficial Aquifer recovery wells have recently been installed. Before a final opinion on the success of completely containing all groundwater contamination at Site 5 can be made, an assessment of the success of these six additional recovery wells will be necessary.

Landfill #6:

Landfill #6 is a closed SWMU. The groundwater contaminants at Landfill #6 are organics (main constituents and highest concentrations as of the First Quarter 1995: trichloroethylene, tetrachloroethylene at 13 ppb and 23 ppb respectively). The state MCL for both trichloroethylene and tetrachloroethylene is 3 ppb. Groundwater remediation at Landfill #6 began in February 1994. The upper and lower Surficial Aquifer both contain low concentrations of volatiles. Historically, only three wells in the upper Surficial Aquifer are contaminated above state MCLs, and

only one sample in the lower Surficial Aquifer has indicated a contaminant concentration above the MCL.

A pump and treat system which consists of two recovery wells in the upper Surficial Aquifer and one recover well in the lower Surficial Aquifer appears to have controlled the further migration of groundwater contamination above the state MCLs.

MEC Building:

Both the upper and lower Surficial Aquifers at the MEC Building are contaminated with organics (main constituents and highest concentrations as of First Quarter 1995: total 1,2-dichloroethene, 1,2 dichlorobenzene, Freon 113 at 2,420 ppb, 1,066 ppb and 2,945 ppb, respectively). No volatile organics have been detected in the groundwater system established at the MEC Building to monitor the Intermediate and Floridan Aquifers.

The estimated horizontal extent of contamination for the upper Surficial Aquifer is approximately 75 feet by 75 feet. The horizontal extent of contamination for the upper Surficial Aquifer consists of two approximately equal 75 by 75 foot areas.

A groundwater recovery system has been installed at the MEC Building. The recovery system for the upper Surficial Aquifer consists of seventeen wells. The recovery system for the lower Surficial Aquifer consists of two recovery wells.

Although there is one well which increased in volatile organic concentrations in the third quarter of 1994, the remainder of the upper Surficial Aquifer appears to be approaching restoration. The distribution and concentration of volatile organics in the lower Surficial Aquifer has been fairly consistent from quarter to quarter. The pump and treat system appears to have controlled the further migration of groundwater contamination above the MCL.

Central Wastewater Pretreatment Facility:

Groundwater within the upper Surficial Aquifer, lower Surficial Aquifer and the Intermediate Aquifer at the Central Wastewater Pretreatment Facility (CWPF) is contaminated with volatile organics. Groundwater monitoring has not occurred beyond the Intermediate Aquifer. The organics are suspected to have originated from spent solvents (main constituents and highest concentrations as of the First Quarter of 1995: 1,1,1 trichloroethane, 1,2 cis dichloroethene, tetrachloroethene, trichloroethene, at 1,292

ppb, 2,343 ppb and 627 ppb, 311 ppb and 447 ppb, respectively). The state MCLs for 1,1,1 trichloroethane, 1,2 cis dichloroethene, tetrachloroethene, trichloroethene are 200 ppb, 70 ppb, 3 ppb and 3 ppb, respectively. The highest historically reported total volatile organic values have been reported CD-10, CD-2D, and CD-4S (13,951 ppb, 18,813 ppb and 55,261 ppb, respectively).

The areal extent of groundwater contamination in the upper and lower Surficial Aquifers is approximately 450 feet by 250 feet. Groundwater contamination in the zone below the 30 +/- foot clay covers an area of approximately 700 feet by 300 feet. A small plume approximately 150 by 50 feet has been identified in the Intermediate Aquifer.

A groundwater recovery system has been operational since May of 1995. The system consists of five recovery wells in the Surficial Aquifer. There are no recovery wells installed to address the contamination found in the Intermediate Aquifer. Before a final opinion is formed on the success of this recovery system to containing the migration of contaminated groundwater in the Surficial Aquifer, an assessment of data from the newly installed recovery system will be necessary. In addition, the groundwater contamination in the Intermediate Aquifer will have to be addressed and further assessment of deeper aquifers will have to be performed.

Waste Conservation Area:

Phase I of the RFI indicates that groundwater at the Waste Conservation Area is contaminated with organic volatiles (main constituents and highest concentrations as of June 1995 Draft RFI Report: vinyl chloride, trichloroethene at 6 and 8 ppb, respectively). There are also some metals present above state MCLs, but it is unclear if these concentrations represent background or releases. The extent of contamination is not presently known, and no decision on the need for recovery wells has been made.

Although observed onsite groundwater contamination is present in several areas of the Lockheed Martin facility, groundwater contamination has not migrated offsite. In addition, there are no onsite human receptors to the observed groundwater contamination. There are thirteen deep production wells onsite. Some of these wells are used for irrigation and toilet operations at remote sites; however, none of the onsite wells are used to supply drinking water.

Although there are no onsite exposures, there are potential offsite exposure points if groundwater contamination in the deeper aquifers were to migrate offsite. For example, the Orlando Utilities Commission (OUC) Martin Plant wellfield is

located immediately north of the facility; production is from depths of 228 to 700 feet below land surface (bls). This wellfield is used to supply potable water to the OUC franchise area. The direction of groundwater flow in the Floridan Aquifer at Lockheed Martin is generally to the east; however, the OUC wellfield does deflect groundwater flow to the north/northeast in the northern portion of the Lockheed Martin facility. Since 1991, Lockheed Martin has monitored Floridan wells near the OUC wellfield to ensure that no adversely-affected groundwater approaches this wellfield.

Although less of an exposure concern due to the eastern and northern components of flow in the Floridan Aquifer, the Orangewood Water Treatment Facility is located approximately 0.5 miles south of the facility; production is from depths of 150 to 1,250 feet bls. This wellfield is used to supply potable water to the Orange County franchise area. Production wells associated with Sea World are also located about a mile south of the facility; production is from depths of 166 feet to 428 feet bls. This water is used for irrigation and industrial purposes (e.g., maintenance of aquatic life habitats).

In summary, there is groundwater contamination onsite, but no offsite groundwater contamination. In addition, Lockheed Martin is also monitoring onsite Floridan wells near the OUC wellfield to ensure that no adversely-affected groundwater approaches this wellfield. Plausible current human exposures to the onsite contamination are controlled by the fact that there are no onsite potable wells and Lockheed Martin is continuing to control access to the contaminated aquifers.

OPTION 1: Surface water is not contaminated or not reasonably expected to be contaminated

Surface water associated with the facility is not known to be contaminated at this time nor is it reasonably expected to be contaminated by SWMUs or AOCs. **Therefore, there are no plausible human exposures which must be controlled due to contaminated surface water.**

OPTION 3: Soil is contaminated, and all plausible onsite human exposures are controlled.

It is possible, but not known, that soil at the Central Wastewater Pretreatment Facility and the Waste Conservation Area may be contaminated with constituent concentrations above relevant action levels. Further sampling and analysis in these areas is needed. Plausible current human exposures at these two areas would be incidental ingestion by onsite workers. In addition, there is contaminated soil present in the old landfills.

The areas under suspicion of containing contaminated soil are covered by grass or pavement and access is only by members of the facility. There is no uncontrolled access to contaminated areas. The contaminated soil which is present in the numerous landfills is also covered, and access is limited and controlled. Therefore, there are no reasonable onsite human exposures to known soil contamination at this time.

Based on the above Option 3 discussion, human exposures to contaminated soil are controlled.

OPTION 1: Air is not reasonably expected to be contaminated.

Releases to air from soil, groundwater and/or surface water contaminated by SWMUs at the facility are not expected to be occurring above relevant action levels. Furthermore, the suspected areas of soil contamination are grassed and paved, thus minimizing the generation of any significant fugitive dust emissions. **Therefore, there are no known human exposures to contamination from SWMUs or AOCs via an air route.**

IV. STATUS CODE RECOMMENDATION FOR CA725:

Sub-option 1B: Plausible onsite human exposures are controlled by implementation of Access Controls

As discussed in Section III, the only two environmental media known to be of concern at this time are groundwater and soil. Groundwater contamination is detected only within the property boundary of Lockheed Martin. However, there are no onsite drinking water wells, and Lockheed Martin recognizes that further access to contaminated groundwater must be restricted. Although there is onsite soil contamination (e.g., the landfills), there are no plausible onsite human exposures to this contamination because Lockheed Martin has limited access to these areas.

Because there are no plausible onsite human exposures to the contamination detected in the onsite media of concern, it is recommended that CA725 YE be entered into RCRIS.

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are three (3) status codes listed under CA725:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this date.

3) NC No releases to groundwater.

Region 4 has also added an additional status code which tracks the initial evaluations in which a determination is made that groundwater releases are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable in the first CA750 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NR) to explain the current status of groundwater control.

Note that the three national status codes for CA750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured is termed the designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every contaminated area at the facility must meet the definition before these event/status codes can be entered. Similarly, the regional status code is applicable if contaminated groundwater is not controlled in any area(s) of the facility.

This evaluation for CA750 is the first CA750 evaluation performed for Lockheed Martin. Please note that CA750 is based on the adequate control of **all** contaminated groundwater at the facility.

The following discussions, interpretations and conclusions on contaminated groundwater at the facility are based on the following reference documents: February 1992 draft RFI Work Plan for the Central Wastewater Pretreatment Facility, Revision II of the final RFI Work Plan for the Waste Conservation Area and Hellfire Assembly Area, Third Quarter 1994 Status Report on Groundwater Monitoring and Remediation, Fourth Quarter 1994 Status Report on Groundwater Monitoring and Remediation, First Quarter 1995 Status Report on Groundwater Monitoring and Remediation, Semi-Annual and Annual Report on Effectiveness of Corrective Action at Site 5.

VI. STATUS CODE RECOMMENDATION FOR CA750:

OPTION 4: CA750 NO; Releases to groundwater have occurred, and all groundwater releases at the facility are not controlled.

Based on data contained in the documents referenced in Section V, the groundwater is contaminated at concentrations above relevant action levels by releases from several SWMUs or

SWMU Groups (Landfill #3, Landfill #4, Landfill #5, Landfill #6, the MEC Building, the Central Wastewater Pretreatment Facility, and the Waste Conservation Area). All of these SWMUs or SWMU Groups have pump and treat systems in place to address the contamination above state MCLs (see the discussion of groundwater contamination in Section III of this memo). However, the Central Wastewater Pretreatment Facility's system has only recently started (March/April 1995), and there is little performance data to adequately determine success. In addition, it has recently been determined that further assessment at Landfills #3 and #4 is necessary. Additional recovery wells have also been installed, and assessment of these wells has not occurred. Therefore, an opinion on the successful control of groundwater contamination at these two landfills is not possible at this time. Both the Central Wastewater Pretreatment Facility and the Waste Conservation Area have at least one aquifer which has uncontrolled contaminated groundwater migration above state MCLs. All of the other SWMUs or SWMU Groups listed in Section III have performance data which suggest the systems have been effective in controlling the migration of the plume.

Based on the discussion above, it is recommended that CA750 NO be entered into RCRIS. Once performance monitoring is available for the Central Wastewater Pretreatment Facility, Landfill #3, Landfill #4, Landfill #5 and the Waste Conservation Recovery Area, then a CA750 reevaluation will be necessary.